



Natural Heritage & Endangered Species Program

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Natural Community Fact Sheet Atlantic White Cedar Bog Community

Community description

Atlantic White Cedar Bogs are semi-forested acidic dwarf-shrub peatlands. Short (2-10m or 6-30 ft) Atlantic White Cedars (*Chamaecyparis thyoides*) dominate the open canopy. An open to nearly continuous, low (<1m or 3ft) shrub layer of leatherleaf (*Chamaedaphne calyculata*) is characteristic. The shrub layer often includes small Atlantic White Cedars. The community type shares many species and characteristics of bogs, other acidic peatlands, and Atlantic White Cedar Swamps in which they usually occur as openings.

Atlantic White Cedar (AWC) Bogs (S2) are **NHESP Priority Natural Communities** due to their small acreages and limited distribution. High-quality examples of this wetland community type are tracked by NHESP.



Atlantic White Cedar Bog with Leatherleaf and Virginia Chain-fern and scattered Atlantic White Cedar, Red Maple and other trees in the background. Photo: T. O'Shea, MassWildlife.

Environment

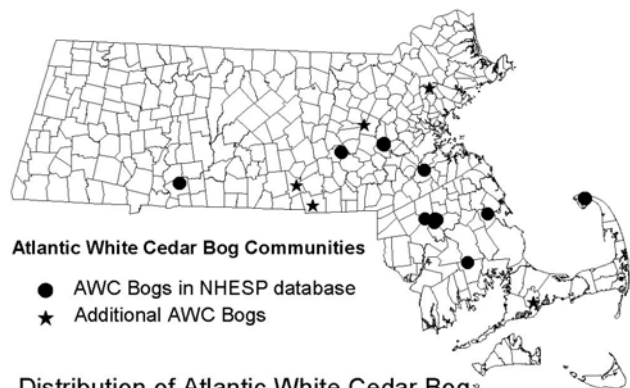
In Massachusetts, most known examples of AWC Bogs occur as small (<3 acre) openings within larger AWC Swamps, all in parts of the state where Oak and Oak – Pine forests dominate the landscape. The settings seem to be variable; pond border, patches in large swamps, and on Cape Cod, in kettleholes where they are surrounded by upland Pitch Pine - Oak Forests and Pitch Pine - Scrub Oak Communities.

Range in Massachusetts

AWC Bogs occur primarily in southeastern Massachusetts, slightly west and south of Boston. There are a few examples across the southern part of the state to the Connecticut River. They are known from elsewhere in New England as well.

Characteristic plant species in Massachusetts

Atlantic White Cedar (*Chamaecyparis thyoides*) dominates the sparse canopy, with Red Maple (*Acer rubrum*) and occasional White and Pitch Pine (*Pinus strobus* and *P. rigida*). An open to dense low shrub layer dominated by Leatherleaf (*Chamaedaphne calyculata*) often includes Sheep Laurel (*Kalmia angustifolia*) mixed with clumps of tall shrubs including Highbush Blueberry (*Vaccinium corymbosum*) and Swamp Azalea (*Rhododendron viscosum*). Other shrubs include Black and Dwarf Huckleberry (*Gaylussacia baccata* and *G. dumosa*). There is typically a well-formed layer of a variety of species of Sphagnum moss below the shrubs, and Large and Small Cranberry (*Vaccinium macrocarpon* and *V. oxycoccus*), sundews (*Drosera* spp.) and Pitcher-plants (*Sarracenia purpurea*) occur throughout. Many of these species and features are shared with other acidic peatlands.



Atlantic White Cedar Bog Communities

- AWC Bogs in NHESP database
- ★ Additional AWC Bogs

Distribution of Atlantic White Cedar Bog[®]
Communities in Massachusetts, 2007

Characteristic animal species in Massachusetts

Due to the extended periods of saturation, lack of nutrients, and the high acidity and low oxygen content of the water, acidic peatlands including AWC Bogs are inhospitable to many animal species. Winged animals and large terrestrial animals can use peatlands as part of their habitat and then move on when conditions are unfavorable. White-tailed deer use acidic peatlands for browsing and grazing, and their trails are often evident across the peat mat. Many bird species use peatlands for part of the year as nesting or foraging habitat. Many species of dragonflies and damselflies inhabit acidic peatlands, especially where there is adjacent open water. The acidity and low oxygen content make peatlands poor habitat for most amphibians and reptiles, although some species can breed in the shallow pools that form among the Sphagnum hummocks and individuals may incorporate AWC Bogs as part of their habitat.

Rare species

Pod-grass (*Scheuchzeria palustris*)(E) has been found in an AWC Bog, as well as in Level Bogs and there are some good populations of Mud-sedge (*Carex limosa*)(WL) in AWC Bogs. Several state-protected rare animal species use all types of acidic peatlands as an important component of their habitat. Blanding's Turtles (*Emydoidea blandingii*)(T) and Spotted Turtles (*Clemmys guttata*; delisted in 2006, but protected on state lands) occupy a variety of types of wetlands in Massachusetts, including AWC Bogs. When Hessel's Hairstreak (*Callophrys hesseli*)(SC) is found, it is in Atlantic White Cedar communities, including AWC Bogs. A suite of moth species occur in AWC Bogs, including several MESA protected and others less commonly found in the state. Several species of state rare dragonflies and damselflies are found in AWC Bogs as well as Level Bogs and other acidic peatlands.

MESA regulated species: SC=State Special Concern, T=State Threatened, E=State Endangered
WL=not regulated, Watch List

Threats and Management Recommendations

Although land acquisition and conservation restrictions are important ways to protect the remaining examples of Atlantic White Cedar Bogs and the Cedar Swamps in which most occur, in Massachusetts, land protection alone will not maintain these sites as high-quality, natural communities. Alterations of hydrology and of surface and peat water chemistry impact species composition and community quality. AWC swamps require a natural cycle of wet and dry periods for their survival and reproduction. Standing water for much of the year is unfavorable for both seed germination and seedling survival, and young seedlings are killed by both drowning and drought. Human induced alterations in water levels should be avoided.

While hydrology and geochemistry appear to have the greatest effect on species composition, trampling has a great impact on peat mat integrity and quality. Trampling by humans flattens the natural hummock-hollow topography of all types of peatlands, wears permanent trails into the mat, and kills plants. All efforts must be made to limit trampling, particularly at sites that are frequently visited by researchers and students. Whenever possible, site visits should only be made to those publicly owned peatlands with established boardwalks.

Atlantic White Cedar regenerates best following catastrophic disturbances such as hurricanes and fires. In the absence of disturbance, Red Maple and shrubs increase in abundance at the expense of Atlantic White Cedar. Selective cutting is detrimental to the persistence of all types of AWC swamps, because AWC does not regenerate well in shade: for this species and the communities in which it is dominant, clear cutting is the better harvest method if harvesting must be done.

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